



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/738,127	12/15/2000	Larry B. Li	50944.9900	9821

7590 11/18/2003  
SCOTT A. HORSTEMEYER  
THOMAS, KAYDEN, HORSTEMEYER & RISLEY, L.L.P.  
100 GALLERIA PARKWAY  
SUITE 1750  
ATLANTA, GA 30339

EXAMINER

DEMAKIS, JAMES A

ART UNIT PAPER NUMBER

2836

DATE MAILED: 11/18/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/738,127

Applicant(s)

LI, LARRY B.

Examiner

James A Demakis

Art Unit

2836

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on Amendment of 7/14/2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.  
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_ 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-7,9-17,19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Iwai et al (USPN 5670885) in view of Haas, Jr. et al (USPN 5392185) and Huard (USPN 4875130).

Regarding claims 1-7,11,13 -15,17,19:

Iwai et al disclose a protective element transistor device 1 connected to the input and output terminals of a semiconductor internal circuit 2 to be protected from ESD by discharging the energy to ground. The protective transistor device is an NPN bipolar, which has the collector tied to ground and the base connected through a resistance value to ground also, is operated as an inverse vertical bipolar transistor, see Col.14, lines 50-64 and Col. 16, lines 39-56, and Figure 5a.

Iwai et al do not disclose a transmission line coupling to an internal circuit to be protected for use at RF frequencies of 1-2 Ghz.

Although it is well known that circuits required to operate at high frequencies or RF frequencies need interconnections and couplings designed for transmission lines; these circuits can be utilized with transistors and other circuit elements as at lower frequencies.

Haas, Jr. et al disclose ESD protection circuits for RF applications using bipolar transistors and having improved characteristics of lower capacitance and high switching speeds,

Art Unit: 2836

see "Summary of the Invention" and "Detailed Description of Preferred Embodiments", Section 3, lines 1-29.

It would have been obvious to one having ordinary skill in the art at the time of the invention to have modified Iwai et al for use with a transmission line because the protection of an RF circuit would be analogous to a lower frequency circuit.

Regarding claims 9-10,12,16:

Although it is well known to require the protection device to operate above the normal operating voltages of the circuit that is to be protected, it is also well known and obvious that transistors operate at 5 volts and below.

Huard also treats and discloses typical breakdown voltages and operating voltages, see "Background of the Invention" and "Detailed Description" sections. Furthermore, it would appear straight forward to one of ordinary skill in the art that the voltage that the protection circuit begins to function, has to be higher than the operating voltage of the circuit it is protecting; and the breakdown voltage of the protection transistor must be less than that of the following circuit requiring protection. For a protection transistor to operate at or near 5 volts would not be unusual, since most IC/ transistor circuits can operate at voltages below that, typically between 2-4 volts. For a person of ordinary skill in the art at the time of the invention, it would have been obvious to use 5 volts.

Regarding claims 8,18:

The use of PNP devices in place of NPN devices is well known and obvious.

Art Unit: 2836

Haas Jr et al discloses the use of PNP bipolar junction transistors in ESD protection circuits, see "Detailed Description of Preferred Embodiments", section 3, lines 14-30 and section 5, line 56; and "Abstract".

It would have been obvious to one having ordinary skill in the art at the time of the invention that PNP transistors could be used in place of NPN transistors with adjustments for polarity differences.

***Response to Arguments***

3. Applicant's arguments with respect to claims 1-2, 4-7, 9-10, 12-14, 16-17, 19 have been considered but are moot in view of the new ground(s) of rejection.

The objection of claims 3, 8, 11, 15, 18 is withdrawn.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James A Demakis whose telephone number is 703.305.7938. The examiner can normally be reached on 7:30AM-4:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Sircus can be reached on 703.308.3119. The fax phone number for the organization where this application or proceeding is assigned is 703.872.9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703.308.0956.

James A. Demakis  
11/14/03

  
11-17-03

STEPHEN W. JACKSON  
PRIMARY EXAMINER

Application/Control Number: 09/738,127

Art Unit: 2836

Page 5